

EVIDENCE OF GASTRIC BROODING IN THE AUSTRALIAN LEPTODACTYLID FROG *RHEOBATRACHUS VITELLINUS*

The first record of gastric brooding in the Animal Kingdom was reported in the Australian leptodactylid frog from *Rheobatrachus silus* Liem in 1974¹, and the first photographs of oral birth were published in 1981². The description of *R. vitellinus*³ includes morphological evidence of a close phylogenetic relationship to *R. silus*. Here we report that *R. vitellinus* also broods its young in its stomach and gives birth through its mouth.

On 12.i.84 a single male and female *R. vitellinus* were collected at approximately 2130 hr in a creek bed of large boulders within complex notophyll vineforest in Eungella National Park, Queensland. The water temperature at the site was 19.4°C. The female was greatly distended, and during road transport to Mackay on 13.i.84 she began to give birth to young.

The first juvenile was born at 0700 hr and, during the next 27 minutes, 14 more were born individually or in twos or threes on nine occasions. These individuals were born underwater and it was noticed that the female opened her gape greater than 90°. The subsequent birth of babies was spaced out at less frequent intervals, with single individuals born as follows: 0811 hr, between 0855 and 0915 hr, between 1210 and 1219 hr, between 1630 and 1635 hr and between 2245 hr on 13.i.84 and 0600 hr on 14.i.84. The mother was despatched by air to Adelaide, and a further juvenile was born in transit sometime before 1655 hr.

At 1900 hr on 14.i.84 the mother was cooled and then packed in crushed ice prior to removal of the viscera for histological and biochemical studies. On removal of the entire alimentary canal a bulge was observed in the

stomach, and upon compression a further baby frog was expressed. The juvenile was placed in warm water and recovered consciousness 30 min. later.

The total number of young brooded by the mother was therefore 22, which is within the range for *R. silus* (18-25)⁴. The larger body size of *R. vitellinus*³ has not been accompanied by an increase in the number of young. However the snout-vent length of the young at birth (15.1-15.9 mm in two preserved specimens) is larger than the known range for *R. silus* (11.9-12.8 mm)⁴.

Rheobatrachus silus gives birth to young at the surface of the water. We remain uncertain whether the underwater birth of *R. vitellinus* was a natural phenomenon or a consequence of the artificial conditions in which the female was constrained.

The female on which these observations are based subsequently was cleared and stained for bone and cartilage and is a paratype (South Australian Museum R 25447)³.

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¹ Corben, C. J., Ingram, G. J. & Tyler, M. J. (1974). *Science* 186, 946-47.

² Tyler, M. J. & Carter, D. B. (1981). *Anim. Behav.* 29, 280-82.

³ Mahony, M., Tyler, M. J. & Davies, M. (1984). *Trans. R. Soc. S. Aust* 108, 155-162.

⁴ Tyler, M. J. (1983). Oral birth and perinatal behaviour. Chap. 5, pp. 36-43. *In* M. J. Tyler (Ed.), *The Gastric Brooding Frog*. (Croom Helm: London & Canberra).